

# Centralizing Model Development: Is it Worth it?

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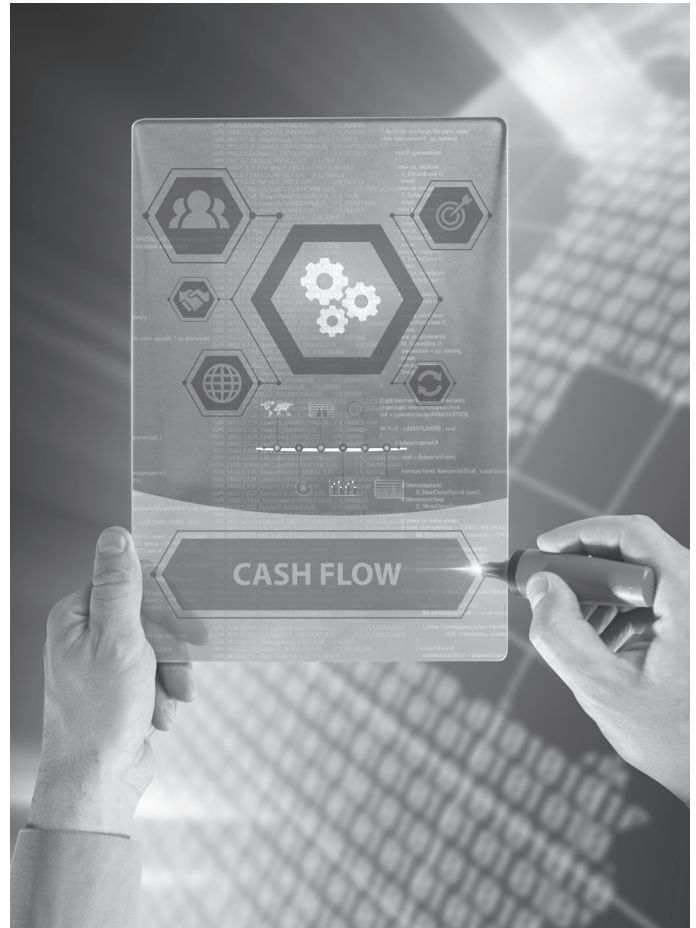
Actuarial models serve as the backbone to a life insurer’s financial success and are heavily relied upon to understand expected future cash flows, satisfy regulatory requirements, and support strategic decisions.

Actuarial model development often becomes decentralized as a natural consequence of the segregation of business units within the organization, despite a large overlap in modeling requirements. Figure 1 illustrates common actuarial business functions.

Figure 1  
Common Actuarial Business Functions



Under a decentralized model development framework, a separate team is responsible for developing each model or group of models. In contrast, under a centralized model development framework, a single team is responsible for developing and



maintaining the actuarial models for all business units within a company.

While many would agree that centralizing the model development function is beneficial, companies often fail to centralize development because of logistical complexity, resource requirements, and internal resistance. However, centralized development promotes standardization across business units, increases efficiency within the company, and simplifies auditability of the actuarial models.

The remainder of this article will further discuss decentralized and centralized model development frameworks and provide tips and rationale for transitioning toward centralized model development.

## DECENTRALIZED MODEL DEVELOPMENT: BENEFITS AND CHALLENGES

Decentralized model development certainly facilitates the flexibility required in today’s actuarial modeling environment; however, it may foster increased operational risks and longer-term inefficiencies. Key benefits and challenges of decentralized model development are outlined in Table 1.

Table 1  
Benefits and Challenges of Decentralized Model Development

Benefits	Challenges
<p><b>Independence</b></p> <p>Business units maintain autonomy around modeling decisions.</p> <p>Models have a clear owner within each business unit.</p> <p>Model issues and errors are isolated to the specific model.</p>	<p><b>Standardization</b></p> <p>Model inputs and output may differ materially between models.</p> <p>Model output definitions may vary between models or systems, leading to possible misinterpretations of results.</p> <p>Modeling systems have different limitations.</p>
<p><b>Flexibility</b></p> <p>Each business unit can use the best-in-class system for the model purpose and business modeled.</p> <p>Model updates can be quickly implemented.</p>	<p><b>Efficiency</b></p> <p>Decentralized models may result in duplication of effort.</p> <p>Costs may be higher due to extra system licenses, multiple modeling environments, etc.</p>
<p><b>Customization</b></p> <p>Business units can customize to the model purpose.</p> <p>Models only need to include necessary components.</p>	<p><b>Operational Silos</b></p> <p>Communication between business units may be limited.</p> <p>Increased key person risk (e.g., only the dedicated model owner has knowledge of intricate model details).</p>

### CENTRALIZING MODEL DEVELOPMENT IS WORTH IT

Naturally, the primary advantages and disadvantages of a centralized model development framework can be deduced by inverting Table 1. However, a deeper dive illustrates the tangible benefits that centralizing model development can bring a life insurer.

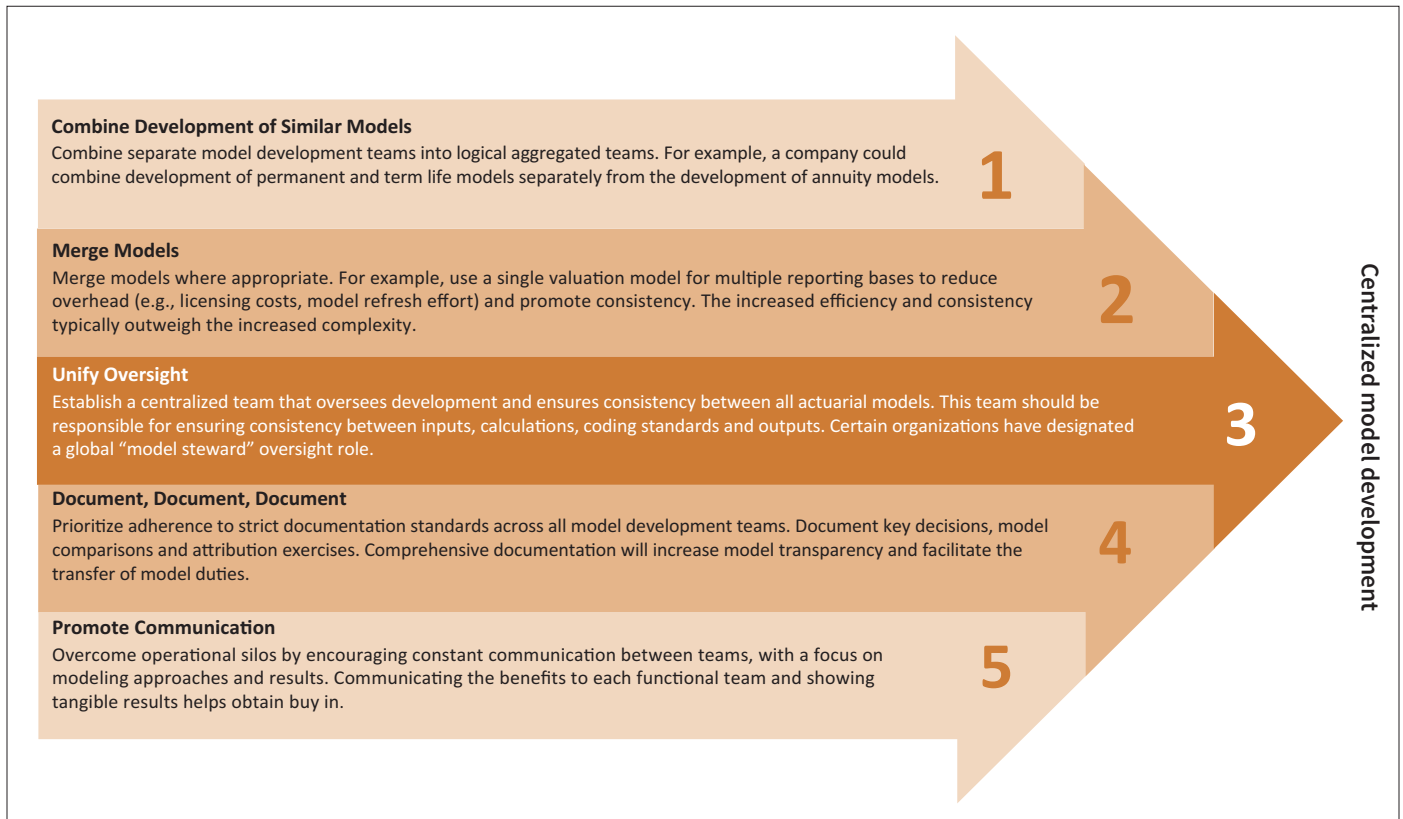
- **Centralizing model development facilitates standardization across business units.** It promotes consistency among modeling systems, inputs, modeling approaches, outputs, documentation and so on. Conversely, lack of standardization increases model risks. For example, an annual assumption update may become error-prone when multiple models require different data formats. Further, it is common for separate actuarial models of the same block of business (e.g., pricing, valuation, cash flow testing) to project diverging cash flows due to varying modeling approaches. Standardization improves the ability to compare and attribute results from different models.
- **Centralizing model development creates long-term efficiencies by combining multiple teams.** Reducing staff allocated to model development, decreasing turn-around time for analyses impacting multiple models, and increasing time available to validate and analyze results are concrete examples of common efficiencies achieved in a centralized framework.
- **Centralizing model development simplifies auditability and external interactions.** Consistency among

models, coupled with a unified team that understands those models, results in efficient and effective conversations with external parties, such as auditors, regulators, and rating agencies.

### NATURAL TENDENCY TOWARD DECENTRALIZED MODEL DEVELOPMENT

Decentralized model development tends to fall out of the natural evolution of a life insurer. Consider Decentralized & Co., which has been selling traditional life products since 1970 and in 2015 began selling fixed annuity products with living benefit riders. Jane has led the traditional life U.S. Generally Accepted Accounting Principles (GAAP) and statutory valuation team for 25 years and has a well-established process for converting pricing models to financial reporting models in an actuarial software system in place since 2000. However, the newly hired team developing the fixed annuity product and models found the legacy traditional life system to lack robust annuity and hedge modeling functionality and opted to implement a second actuarial software system. In 2017, Decentralized & Co. considered upgrading the traditional life models and integrating the life and annuity modeling teams but was met with resistance from Jane's team due to their unfamiliarity with the new system and product line, and from finance due to the implementation costs. The company has deferred its integration plans but intends to revisit in a few years.

Figure 2  
Tips for Transitioning to a Centralized Development Structure



### TIPS FOR CENTRALIZING MODEL DEVELOPMENT

Organizations often view centralizing the entire model development process as a daunting task. Strategically centralizing specific aspects of model development allows companies to retain a range of decentralization benefits while addressing several challenges with minimal effort, logistics or resistance. Figure 2 outlines tips to consider when transitioning to a centralized model development structure.

### CONCLUSION

Actuarial modeling is a vital component of insurance company operations; however, models are often developed under a decentralized framework, resulting in increased operational risk and other challenges.

Organizations often view centralizing the entire model development process as a daunting task. In such situations, prioritizing centralization of certain aspects of the model development process promotes some clear near-term “wins,” which may help overcome resistance to a broader centralization effort. As the industry and key stakeholders continue to emphasize and prioritize model risk management, centralizing model development is critical. ■

*The views or opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of Oliver Wyman.*



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